Five Los Alamos researchers receive Early Career Awards

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Grants to support innovation in basic science, energy security, climate change

LOS ALAMOS, New Mexico, January 21, 2010—Five Los Alamos National Laboratory scientists have been awarded five-year research grants under the American Reinvestment and Recovery Act through the U.S. Department of Energy's prestigious Office of Science Early Career Research Program, Energy Secretary Steven Chu announced recently. The awards represent a significant investment of Recovery Act funding to bolster the nation's scientific workforce.

Andrew Gaunt, Christopher Mauger, Nathan G. McDowell, Evgenya Smirnova, and Tsuyoshi Tajima of Los Alamos were among 69 early-career scientists selected to receive a share of $85 million in funding under ARRA. According to DOE, the new effort is designed to bolster the nation's scientific workforce by providing support to

exceptional researchers during the crucial early career years, when many scientists do their most formative work. For the next five years, the five laboratory employees will receive at least $500,000 a year to cover their annual salaries and research expenses.

More than 1,750 of the nation's top early-career researchers applied for the funding. A panel of independent, external scientific experts selected the 69 nationwide winners.

"Los Alamos National Laboratory received more early-career awards than any other institution," said Terry Wallace, principal associate director for Science, Technology, and Engineering. "This is a tribute not only to the outstanding young staff, but also to the core capability of the Laboratory—delivering outstanding science in service to the nation."

"LANL continues to attract the nation's top scientists," Wallace said. "These awards underscore that Los Alamos's central mission nurtures strong multidisciplinary scientific innovation that is crucial to solving the nation's toughest problems. We are extremely proud of these scientists and their potential."

The five award-winning projects are:

- Andrew Gaunt, LANL's Inorganic, Isotope, and Actinide Chemistry Group; Molecular Transuranic Discovery Science: Underpinning National Energy Security and Waste Remediation Needs: Gaunt plans to investigate the interactions of "soft donor" extractant molecules to separate actinides from lanthanides. Gaining a more complete understanding of fundamental chemical bonding properties of relevant actinide ions is essential for rational molecular design to develop efficient separation strategies for advanced nuclear fuel cycles. Gaunt came to LANL as a Seaborg Postdoctoral Fellow, and has been a LANL staff member since 2007.
- Christopher Mauger, LANL's Subatomic Physics Group; Design of the Near Detectors and Optimization of Water and Ice Targets for Fine-grained Tracking Detectors for the Fermilab Long-Baseline Neutrino Experiment (LBNE): Mauger will lead the development of a suite of detectors to optimize the sensitivity of the LBNE project, which will study neutrinos, one of the fundamental particles in the Standard Model of the Universe. He will focus on using the near detectors to measure neutrino processes that contribute to the background in the far detector. Mauger has been a LANL staff member since 2008.
- Nathan G. McDowell, LANL's Earth Systems Observation Group; An Integrated Theory on the Mechanisms of Vegetation Survival and Mortality During Drought: McDowell's goal is to develop and test a unified theory of vegetation mortality and survival during drought. McDowell came to LANL as a Director's Postdoctoral Fellow in 2003 and became a staff scientist in 2004. McDowell serves on advisory committees for the National Science Foundation, DOE, and LANL. He is an associate editor for two international journals and has testified before Congress regarding DOE's climate change research.
- Evgenya Smirnova, LANL's High-Power Electrodynamics Group; Advancing Our Understanding of Photonic Band Gap Structures for Accelerators: Smirnova's objective is to advance Photonic Band Gap (PBG) accelerator technology for use in the next generation of particle accelerators for high-energy physics. Superconducting PBG accelerator technology could also deliver extremely intense, short-wavelength laser radiation needed for free-electron lasers. Smirnova came to LANL from the Massachusetts Institute of Technology as a visiting student in 2003. In 2005 she joined the High-Power Electrodynamics Group as a Director's

Postdoctoral Fellow and later became a LANL staff member in 2007. Smirnova received the American Physical Society's Outstanding Doctoral Thesis in Beam Physics Award and is a recipient of several LANL awards.

- Tsuyoshi Tajima LANL's Mechanical Design Engineering Group; Technology Development Toward Very High-Gradient and High Quality-Factor Superconducting RF Cavities: Tajima plans to overcome limits on certain superconducting components of particle accelerators through novel use of thin-film coatings. This work would reduce the size and cost of particle accelerators and could open up a wide variety of compact particle accelerator applications. Tajima has worked at LANL since 2000 and is team leader for vacuum systems within LANL's Accelerator Operations and Technology Division.